

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 (currently amended). A process for the production of an alkenyl carboxylate by comprising reacting an alkene, a carboxylic acid and a molecular oxygen-containing gas in a reaction zone in the presence of a catalyst at an elevated reaction temperature, T, to produce an outlet stream from the reaction zone comprising alkenyl carboxylate and oxygen, and

wherein ~~in said process~~ during a process upset, start-up or shut-down, when the catalyst is contacted with the alkene, at a partial pressure, P, optionally in the presence of the carboxylic acid, and the outlet stream comprises less than 2vol% oxygen, the ~~improvement comprises reducing the partial pressure of the alkene~~ is reduced and/or ~~reducing the reaction temperature~~ is reduced so as to suppress formation of benzene and/or suppress inhibition of the catalyst.

2 (original). A process as claimed in claim 1, wherein the catalyst is contacted with alkene and carboxylic acid, and the outlet stream comprises less than 2 vol% oxygen.

3 (currently amended). A process as claimed in claim 1 or claim 2, wherein the outlet stream comprises 0 to 0.5 vol%, ~~such as 0 to 0.2 vol%~~ oxygen.

4 (previously presented). A process as claimed in claim 1 or claim 2, wherein the alkenyl carboxylate product comprises less than 100 ppb benzene.

5 (currently amended). A process as claimed in claim 1 or claim 2, wherein the partial pressure of alkene, P, ~~such as ethylene~~, in the reaction zone is at least 0.3 bar or greater, ~~such as at least 1 bar, for example, at least 2 bar.~~

6 (previously presented). A process as claimed in claim 1 or claim 2, wherein the partial pressure of alkene in the reaction zone is reduced to at least 50% less than P.

7 (original). A process as claimed in claim 6, wherein the partial pressure of alkene in the reaction zone is reduced by removing substantially all the alkene from the reaction zone.

8 (currently amended). A process as claimed in claim 7, wherein the alkene, optional carboxylic acid, and any oxygen present, are removed from the reaction zone by purging the reaction zone with an inert gas, ~~preferably nitrogen.~~

9 (currently amended). A process as claimed in claim 1 or claim 2, wherein the reaction is carried out at a temperature, T, of at least 100°C, ~~preferably at least 140°C.~~

10 (currently amended). A process as claimed in claim 1 or claim 2, wherein the reaction temperature is reduced to at least 20°C below T_r , ~~preferably to at least 50°C below T_r .~~

11 (currently amended). A process as claimed in claim 10, wherein the reaction temperature is reduced to below 100°C, ~~preferably to 50°C or lower.~~

12 (previously presented). A process as claimed in claim 1 or claim 2, wherein the catalyst comprises a Group VIII metal, a promoter and optionally a co-promoter.

13 (currently amended). A process as claimed in claim 1 or claim 2, wherein the catalyst is in contact with the alkene, and optionally the carboxylic acid, at low levels of molecular oxygen, for ~~[>0 to 18] hours, preferably, [>0 to 12] hours, and more preferably, [>0 to 6]~~ >0 to 18 hours, prior to reducing the partial pressure of the alkene and/or reducing the reaction temperature.

14 (currently amended). A process as claimed in claim 13, wherein the catalyst is in contact with the alkene and the carboxylic acid, at low levels of molecular oxygen, for ~~[>0 to 12] hours, preferably, [>0 to 6]~~ >0 to 12 hours, prior to reducing the partial pressure of the alkene and/or reducing the reaction temperature.

15 (currently amended). A process for the production of an alkenyl carboxylate ~~in which~~ comprising:

contacting an alkene, a carboxylic acid and a molecular oxygen-containing gas ~~are contacted~~ in a reaction zone at an elevated temperature, T, in the presence of a catalyst having a catalytic activity y, comprising a Group VIII metal, a promoter and an optional co-promoter, ~~characterised in that where~~

wherein during the course of said process, a process upset, start-up or shut-down, when the catalyst is contacted with the alkene, optionally in the presence of the carboxylic acid, and in the substantial absence of the molecular oxygen-containing gas, the period of contact, Z, between the catalyst and the alkene, and optional carboxylic acid is insufficient to reduce the catalytic activity by more than 10% of y.

16 (original). A process according to claim 15, wherein where during the course of said process, the catalyst is contacted with the alkene, optionally in the presence of the carboxylic acid, in the substantial absence of the molecular oxygen-containing gas, the partial pressure of the alkene is reduced and/or the temperature of the reaction zone is reduced.

17 (currently amended). A process according to claim 16, wherein the partial pressure of alkene in the reaction zone is reduced by purging the reaction zone with an inert gas, ~~preferably nitrogen.~~

18 (currently amended). The process according to any one of claims 15 to 17, wherein the alkene is ethylene, the carboxylic acid is acetic acid, the alkenyl carboxylate produced is vinyl acetate and the period of contact, Z, of the catalyst with ethylene or

ethylene and acetic acid is in the range ~~[>0 to 18]~~ >0 to 18 hours, preferably, in the range, ~~[>0 to 12] hours and more preferably, in the range [>0 to 6] hours.~~

19 (currently amended). The process according to claim 18 wherein the period of contact, Z, of the catalyst with ethylene and acetic acid is in the range ~~[>0 to 12] hours, preferably, in the range [>0 to 6]~~ >0 to 12 hours.

20 (previously presented). A process according to claim 1 or claim 15, wherein the process for the production of alkenyl carboxylate is carried out heterogeneously with the reactants being present in the gas phase or as a mixture of gas and liquid phases.

21 (previously presented). A process according to claim 1 or claim 15, wherein the alkene is a C₂-C₄ alkene.

22 (previously presented). A process according to claim 1 or claim 15, wherein the carboxylic acid is a C₂-C₄ carboxylic acid.

23 (currently amended). A process according to claim 1 or claim 15, wherein the alkene is present in the feed to the reaction zone in a range between 30 and 85mol% of the total reaction composition, ~~preferably at least 50mol% of the total reaction composition.~~

24 (currently amended). A process according to claim 1 or claim 15, wherein the carboxylic acid is present in the feed to the reaction zone in a range between 2 and 30mol% of the total reaction composition, ~~preferably 5 to 15mol%.~~

25 (previously presented). A process according to claim 1 or claim 15, wherein the molecular oxygen-containing gas is molecular oxygen.

26 (previously presented). A process according to claim 1 or claim 15, wherein the process for the production of alkenyl carboxylate is carried out as a fluid bed process.

27 (original) A process according to claim 26 wherein the molecular oxygen-containing gas is present in the feed to the reaction zone in an amount in the range 3 to 20 mol% of the total reaction composition.

28 (previously presented). A process according to claim 1 or claim 15, wherein the alkene is ethylene and the carboxylic acid is acetic acid, such that the alkenyl carboxylate produced is vinyl acetate.

29 (currently amended). A process according to claim 1 or claim 15 wherein the catalyst for use in the process for the production of alkenyl carboxylate comprises palladium, a promoter selected from gold, copper, cerium and mixtures thereof and a

co-promoter material selected from cadmium, barium, potassium, sodium, manganese, antimony, ~~and/or~~ and lanthanum, present in the finished catalyst as a salt.

30 (original). A process according to claim 29 wherein the catalyst is supported on a catalyst support selected from porous silica, alumina, silica/alumina, titania, silica/titania and zirconia.

31 (previously presented). A process according to claim 1 or claim 15, wherein the temperature in the reaction zone, T, is in the range 100°C-400°C and the pressure in the reaction zone is from atmospheric pressure up to 20 barg.

32 (new). A process as claimed in claim 3, wherein the outlet stream comprises 0 to 0.2 vol% oxygen.

33 (new). A process as claimed in claim 5, wherein the alkene, P, is ethylene and partial pressure in the reaction zone is at least 1 bar.

34 (new). A process as claimed in claim 33, wherein the partial pressure in the reaction zone is at least 2 bar.

35 (new). A process as claimed in claim 8, wherein the inert gas is nitrogen.

36 (new). A process as claimed in claim 9, wherein the reaction is carried out at a temperature, T, of at least 140°C.

37 (new). A process as claimed in claim 11, wherein the reaction temperature is reduced to 50°C or lower.

37 (new). A process as claimed in claim 10, wherein the reaction temperature is reduced to at least 50°C below T.

38 (new). A process as claimed in claim 13, wherein the catalyst is in contact with the alkene, and optionally the carboxylic acid, at low levels of molecular oxygen, for >0 to 12 hours prior to reducing the partial pressure of the alkene and/or reducing the reaction temperature.

39 (new). A process as claimed in claim 38, wherein the catalyst is in contact with the alkene, and optionally the carboxylic acid, at low levels of molecular oxygen, for >0 to 6 hours prior to reducing the partial pressure of the alkene and/or reducing the reaction temperature.

40 (new). A process as claimed in claim 14, wherein the catalyst is in contact with the alkene and the carboxylic acid, at low levels of molecular oxygen, for >0 to 6 hours prior to reducing the partial pressure of the alkene and/or reducing the reaction temperature.

41 (new). A process according to claim 17, wherein the inert gas is nitrogen.

42 (new). The process according to claim 18, wherein the period of contact, Z, of the catalyst with ethylene or ethylene and acetic acid is in the range >0 to 12 hours.

43 (new). The process according to claim 42, wherein the period of contact, Z, of the catalyst with ethylene or ethylene and acetic acid is in the range >0 to 6 hours.

44 (new). The process according to claim 19 wherein the period of contact, Z, of the catalyst with ethylene and acetic acid is in the range >0 to 12 hours.

45 (new). The process according to claim 44 wherein the period of contact, Z, of the catalyst with ethylene and acetic acid is in the range >0 to 6 hours.

46 (new). A process according to claim 23, wherein the alkene is present in the feed to the reaction zone in a range of at least 50mol% of the total reaction composition.

47 (new). A process according to claim 24, wherein the carboxylic acid is present in the feed to the reaction zone in a range of 5 to 15mol% of the total reaction composition.